

REMARKS

I. Pending Claims

Claims 1-20 were pending in the application as originally filed. Claims 1, 5, 7, 9 and 18-20 have been amended. Claims 21-25 are being added in this amendment. Based upon the remarks below, allowance of the claims is respectfully requested.

II. Amendments To The Specification

The "Cross-Reference To Related Applications" section has been amended to indicate that the parent application of the current application is now issued as US Patent No. 6,253,068.

III. Amendments To The Claims

Claims 1, 6, 7, 9 and 18-20 have been amended for formal matters and to correct typographical errors, and not to distinguish over the cited references. Specifically, Claims 1 has been amended to recite "a" prior to the recitation of "tuned circuit" a typographical error in the claim as originally filed. Claims 1 and 20 have been amended to replace "said" with "the" for consistency as the definite article throughout all of the claims. Claim 6 has been amended to recite "controlled" in place of "control" in reference to the "voltage controlled oscillator," in order to correct a typographical error in the claim as filed. Claims 7, 9, 18, and 19 have been amended to recite "voltage-controlled oscillator" in place of "oscillator", for consistency throughout all of the claims. None of the amendments to the claims narrow the scope of the claims.

IV. Claim Rejections Under The Judicially Created Doctrine Of Double Patenting

Claims 1-20 were rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 1-22 of U.S. Patent No. 6,253,068.

A terminal disclaimer is enclosed to overcome this "double-patenting" rejection. Applicants are not admitting by the terminal disclaimer that any Claims of the pending Application are obvious over any claims of U.S. Patent No. 6,253,068. The terminal disclaimer is being file solely to expedite issuance of the patent.

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V. Claim Rejections Under 35 U.S.C. § 103(a)

a. Claims 1, 4-10, 14-18 and 20

Claims 1, 4-10, 14-18 and 20 were rejected under 35 U.S.C. 103(a) as being unpatentable over Biehl (document “A Fully-Integrated 900MHz spread spectrum transmitter”) in view of Tanaka et al. (6,061,550).

Applicants respectfully submit that one of ordinary skill in the art would not look to combine the disclosure of Biehl with Tanaka et al., and therefore the rejection based upon their combination should be withdrawn.

Biehl discloses a “spread-spectrum transmitter” and indicates that “[o]nly receivers that synchronize to the same pseudo-random sequence can demodulate the information.” (Biehl, p. 308, col. 1, paragraph 1). Biehl further discloses that “[t]he basic configuration of the transmitter IC is a crystal controlled reference oscillator with frequency-modulation capability, a PLL which multiplies the reference frequency to the transmitting frequency, a BPSK modulator for producing a spread-spectrum, and an output amplifier.” (Biehl, p. 308, col. 2, paragraph 1). In Biehl, the “BPSK modulator is a double-balanced mixer” where “[t]he lower stage is driven by the VCO, and the upper stage is driven from the input of the direct sequence signal via an internal amplifier.” (Biehl, p. 309, col. 2, paragraph 1).

Tanaka et al. disclose that “an oscillation loop is formed by a *closed circuit* including the resonator circuit Re, the antenna ANT, and the base and emitter of the transistor Tr, which constitutes the Colpitts oscillator 10.” *Emphasis added.* (Col. 2/ln. 32-36). Further, Tanaka et al. disclose that “when the power voltage V_{CC} is applied, oscillation starts due to the amplification function of the transistor Tr at the resonant frequency unique to the resonator circuit Re.” (col. 2/ln. 39-42).

Applicants respectfully submit that combining the oscillation loop that is a closed circuit as taught by Tanaka et al. with the spread-spectrum transmitter of Biehl would render Biehl unusable as a spread-spectrum transmitter. Specifically, Biehl requires a “BPSK modulator for producing a spread-spectrum” where “the lower stage is driven by the VCO, and the upper stage is driven from the input of the direct sequence signal via an internal amplifier.” In such an arrangement, moving the VCO at an output of the BPSK modulator would cause the BPSK modulator to lack a driving circuit. Without such a driving circuit, BPSK modulator would be unable to function and to generate a spread-spectrum signal. Therefore, the closed circuit oscillation loop of Tanaka et al. would make the spread-spectrum transmitter of Biehl

unusable for its primary function and the combination of Biehl with Tanaka et al. must be withdrawn for at least this reason. *See*, MPEP 2143.01.

Further, the combination of Biehl and Tanaka does not teach that “a resonance point of the tuned circuit being automatically tuned to the operating frequency of the voltage-controlled oscillator” as is recited in Claim 1. Biehl teaches that the “resonance frequency [of the VCO] is tuned by an external varicap diode driven by the charge pump via a loop filter”, (Biehl, p. 309, col. 2, paragraph 4), whereas Tanaka teaches that “an oscillation loop is formed by a closed circuit including the resonator circuit Re, the antenna ANT, and the base and emitter of the transistor Tr, which constitutes the Colpitts oscillator 10.” (Col. 2/ln. 32-36). Therefore, even if Biehl and Tanaka could be combined as suggested by the Examiner, they still do not teach all of the elements of Claim 1.

Therefore, claim 1 is allowable over Biehl in view of Tanaka. Claims 4-10 and 14-18 depend from Claim 1 and are allowable for at least the same reasons as discussed with respect to Claim 1.

Claim 20 recites “coupling the modulated signal to an antenna, the antenna forming part of a resonant network with the oscillator,” and “automatically tuning a resonant point of the resonant network to the oscillating frequency.” As discussed above, Biehl does not teach that the antenna can form part of a resonant network. Further, neither Biehl or Tanaka teach “automatically tuning a resonant frequency of the resonant network to the oscillating frequency” as is recited in Claim 20. Therefore, Claim 20 is allowable over Biehl in view of Tanaka.

b. Claims 2-3

Claims 2-3 were rejected under 35 U.S.C. 103(a) as being unpatentable over Biehl (document “A Fully-Integrated 900MHz spread spectrum transmitter”) in view of Tanaka et al. (6,061,550) and further in view of McClellan et al. (5,612,648).

Claims 2-3 depend from Claim 1 and are allowable for at least the same reasons as discussed with respect to Claim 1.

Moreover, Claim 2 recites, *inter alia*, that the “voltage-controlled oscillator is coupled serially with a phase detector and a loop filter to form a phase-locked loop.” McClellan et al. discloses that “the control voltage for the G_m -C filter 40 is generated using the PLL 50.” (Col. 2/ln. 5-6). McClellan et al. disclose that “PLL 50 comprises a phase comparator 52 which receives an external reference signal such as a signal 51 from a crystal oscillator (not

shown) and a signal 53 from a voltage-controlled-oscillator (VCO) 54." (Col. 2/ln. 6-10). Therefore, in McClellan et al. filter 40 is not part of PLL 50 and Claim 2 is allowable for this reason as well.

Claims 3, 7, 8, 14 and 15 depend from Claim 2 and are allowable for at least the same reasons as discussed with respect to Claim 2.

c. Claim 11

Claim 11 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Biehl (document "A Fully-Integrated 900MHz spread spectrum transmitter") in view of Tanaka et al. (6,061,550) and further in view of Reiger et al. (5,850,595).

Claim 11 depends from Claim 1 and is allowable for at least the same reasons as discussed with respect to Claim 1.

d. Claim 19

Claim 19 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Biehl (document "A Fully-Integrated 900MHz spread spectrum transmitter") in view of Tanaka et al. (6,061,550) and further in view of Yamanaka (5,027,242).

Claim 19 depends from Claim 1 and is allowable for at least the same reasons as discussed with respect to Claim 1.

VI. Allowable Subject Matter (Claims 12 and 13)

The Examiner has indicated that Claims 12 and 13 are allowable, if rewritten in independent form to include all the limitations of their base claims. New Claim 21 is Claim 12 rewritten in independent form, incorporating all of the limitations of Claim 1 from which Claim 12 depends. Accordingly, Claim 21 and its dependent Claims 22-25, of which Claim 23 is rewritten Claim 13, are submitted to be allowable.

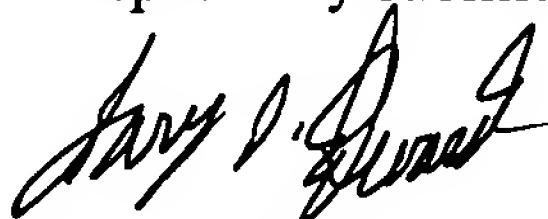
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Conclusion

For the above reasons, Applicants respectfully request allowance of Claims 1-20. Should the Examiner have any questions concerning this response, the Examiner is invited to call the undersigned at (408) 453-9200, extension 1338.

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Respectfully submitted,



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Version with markings to show changes made to the Specification

Please amend the “Cross-Reference To Related Applications” section, starting on page 1, line 9 and ending on page 1, line 19, as follows.

Cross-Reference to Related Applications

This application is a continuation-in-part of application serial no. 09/074,997, filed on May 8, 1998, issued as U.S. Patent No. 6,253,068, entitled “Fully Integrated All-CMOS AM Transmitter with Automatic Antenna Tuning,” which is based on the provisional application serial no. 60/046,128, filed May 9, 1997, entitled “Fully Integrated All-CMOS AM Transmitter With Automatic Antenna Tuning”, by J. Scott Elder, Joseph T. Yestrebsky, and Mohammed D. Islam.

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Version with markings to show changes made to the Claims

Please amend Claims 1, 6, 7, 9, and 18-20 as follows.

1. (Amended) A transmitter comprising:
a voltage-controlled oscillator having an operating frequency; and
an antenna, [said] the antenna forming part of a tuned circuit coupled to the voltage-controlled oscillator, a resonance point of [said] the tuned circuit being automatically tuned to the operating frequency of the voltage-controlled oscillator.
6. (Amended) The transmitter of Claim 5, wherein the power amplifier, the voltage-controlled oscillator, and the power controller are formed on a single integrated circuit.
7. (Amended) The transmitter of Claim 2, wherein the phase-locked loop further includes a prescalar and a divide-by M circuit coupled between the voltage-controlled oscillator and the phase detector.
9. (Amended) The transmitter of Claim 1, wherein the tuned circuit includes a differential structure of varactor diodes for tuning the resonance point of the antenna to the frequency of the voltage-controlled oscillator.
18. (Amended) The transmitter of Claim 1, further including a shutdown mode circuit coupled to the voltage-controlled oscillator, the shutdown mode circuit and the voltage-controlled oscillator being formed on a single integrated circuit.
19. (Amended) The transmitter of Claim 1, further including a data encoder coupled between a data input pad and the voltage-controlled oscillator, the data encoder and the voltage-controlled oscillator being formed on a single integrated circuit.
20. (Amended) A method of transmitting, comprising:
generating an oscillating frequency with an oscillator within a phase-locked-loop;
modulating [said] the oscillating frequency to create a modulated signal;

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coupling the modulated signal to an antenna, [said] the antenna forming part of a resonant network with the oscillator; and

automatically tuning a resonant point of [said] the resonant network to the oscillating frequency.

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